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ABSTRACT

Research in Bahrain has demonstrated that children in educationally-oriented day care centers made significantly greater gains in cognitive, social, and emotional measures than children in care-oriented centers or at home. This study provided further data and addressed the question of whether there are differences in the daily learning experiences of children who attended the centers where higher gains were found. The behaviors of children and staff in both educationally-oriented and care-oriented preschool settings in Bahrain were observed, using the time-sampling technique, Target Child Observation Manual (TCCM). A total of 2,400 1-minute observations were recorded of 120 children randomly selected from 10 preschool centers. The findings showed that children in educationally-oriented settings were more actively involved in learning, had longer concentration spans, and initiated more interaction, and staff engaged in more facilitating types of dialogue when compared with staff at care-centered settings. In care-oriented preschools children spent more time in large groups and engaged in more child-to-child speech at the expense of adult-child dialogue. (Contains 81 references.) (Author/BGC)

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Behavioural observations as predictors of children's social and cognitive progress in day care

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Abstract

Research in Bahrain has demonstrated that children in educationally oriented day care made significantly greater gains in cognitive, social and emotional measures than children in care-oriented provision or at home (Hadeed & Sylva, 1994). The study reported here provides further data from this research while addressing the question: **Are there differences in the day-to-day learning experiences of children who attended the centres where higher gains were found?** Time-sampled observations of staff/child behaviours in care and educationally oriented day-care were investigated using the Target Child Observation Manual (Sylva, Roy & Painter, 1980). A total of 2400 one-minute observations were recorded on 120 children, randomly selected from ten pre-school centres (classified as care and educationally oriented, Hadeed, 1993) and matched on several background measures. The results showed that staff practised more active, child-centred approaches to learning. Moreover, their children had longer concentration spans, more task involvement (cognitive challenge), and engaged in more dialogue with adults. In care-oriented pre-schools focused there was more adult-directed management practice. Their children spent more time in large groups and engaged in more child-to-child speech at the expense of adult-child dialogue. Several established features of good pre-school practice have been recognised in this investigation which show that children at educationally-oriented centres were more actively involved in learning, initiated more interaction, and staff engaged in more facilitating types of dialogue when compared with staff at care-oriented centres. The characteristics of different time-sampling instruments used in observational research will be explored while explaining these findings.

Introduction

For nearly a century researchers and educators have been systematically observing children's social behaviour in early learning settings outside the home. A main focus for observation has been children's play. The various forms of play and its different approaches to its study have led to different ideas about the causes of play and the functions it may serve. A trail of early research has shown that there are developmental patterns that social play follow, characterised by levels of social participation which range from simple to complex as the child matures (Parten, 1932; Buhler, 1933). Further dimensions of play research described cognitive levels, maturation (Piaget, 1962) and the complexity of different types of play

(Lunzer, 1958; Smilansky, 1968). Basically, these early works would provide the important groundwork for further research to follow, challenge or modify.

While early research offered rich and descriptive accounts of children's behaviour and interaction during playtime, it was often plagued with methodological drawbacks and problems, either owing to inadequate techniques or poor reliability measures. As empirical evidence grew to support the need and function of play, the development of methods and designs was gradually transformed into more complex models that considered a wide range of background factors on subjects and environments, different types of play, interactive staff/peer behaviours and detailed account of language interaction (Howes & Olenik, 1986; Rubin, Maioni & Hornung, 1976; Sylva et. al., 1980; Tizard, Philps, Plewis, 1976a, 1976b, 1976c). Research evidence showed that different types of play categories significantly fostered cognitive/social functioning e.g. concentration, problem solving skills, imagination and emotional benefits (Hutt, 1982; Hutt, Tyler, Hutt & Christopherson, 1989; Johnson, 1976; Rubin & Maioni, 1975; Sylva et. al., 1980). Structured tasks (Smith & Connolly, 1980) and goal-oriented, challenging tasks (Brierley, 1987; Sylva et al., 1980; Hutt et al, 1989) were shown to stretch interest and imagination. Play that fostered problem solving skills was promoted in exploratory play (Hutt, 1982), pretend play (Fein, 1981; Piaget, 1962; Weinberger & Starkey, 1994) and sociodramatic play (Dansky, 1980; Rubin & Maioni, 1975; Smilansky, 1968; Pepler & Ross, 1981; Smith & Dutton, 1979).

Some studies attempted to establish a causal relationship between active adult intervention in child's play and children's outcome measures (Danksy, 1980; Golomb & Bowen, 1981; Saltz, Dixon & Johnson, 1977; Smilanksy, 1968, Sylva, Bruner & Genova, 1976, Udwin, 1983). The results from these studies (and others) showed play as a strong medium for developing children's cognitive, social and emotional skills while highlighting the importance of the degree and nature of teacher's roles in various types of pre-schools settings. Some evidence showed teachers are more likely to support the cognitive aspects of children's play than they are to support the social aspects of play (Brophy & Hancock, 1985; File, 1994; Murphy, 1980). The findings indicated that adult-child interaction was not necessary for complex play. Children are capable of playing imaginatively on their own at challenging tasks, provided the setting is planned and resourceful and manned by experienced and sensitive staff (Rubin, Maioni & Hornung, 1976; Moore, Evertson & Brophy, 1974).

In addition, studies focusing on language interaction, particularly the type and quality of conversation between staff and children in pre-school settings (Davie, Hutt Vincent & Mason, 1984; Hutt et. al., 1989; McCartney, 1984; McCartney, Scarr, Phillips & Grajek, 1985; Sylva et. al., 1980) showed there was very little dialogue (3-turn sequence) between teachers and children. Children were found to converse more with other children than with adults (Tizard et al., 1976b; Sylva et al., 1980) and more elaborately at home when compared with conversation at pre-school settings (Tizard & Hughes, 1984). Teachers tend to spend the majority of their time 'instructing', not conversing in a rich, productive manner. Often, the language of instruction is in question-type format with high occurrences of one-off remarks (Tizard & Hughes, 1984) which contain redundant questions and remarks which teachers either know the answer for, or choose to answer, themselves (Wood & Wood, 1983). Many claimed that the quality of interaction between adult and child depended on other factors, such as the allocation of teacher's responsibilities (Bruner, 1980; David, Curtis & Siraj-Blatchford, 1992; Moss & Melhuish, 1991); the teacher's socio-economic background (Bekman, 1982) and the teacher qualifications e.g., training education and experience (Curtis, 1986; Pascal, 1993; Vandell, Henderson & Wilson, 1988; Zigler & Hall, 1988). These factors, along with familial, social, cultural and economic factors were also considered important influences on the child's behaviour while at pre-school (Clark, 1988; Tizard & Hughes, 1984).

This partial review of time-sampled accounts of children's behaviour show that children play differently in different types of pre-school settings. The factors that influence and predict positive behavioural outcomes are many and lie both within and outside the pre-school environment (Ball, 1994). This study in Bahrain provides further support to the body of evidence at hand.

An observational study of children's play in nurseries in Bahrain

This study investigates children and staff behaviours in two different types of pre-school settings, care and educationally-oriented, in Bahrain. The aims are to describe what actually occurred in these two pre-school settings that might account for the differing child outcomes (Hadeed & Sylva, in preparation) and identify behaviours that would serve as possible predictors of children's social and cognitive progress. The main focus presented here looks at the investigation and results from the Target *Child Observation Method* observational instrument used to assess adult and child behaviours/interactions in different pre-school settings

(Sylva, Roy & Painter, 1980) . Developed as part of a number of projects under the Oxford Preschool Project (Bruner, 1980), the TCCM provides a clear, structured tool for observing children's interactions and surroundings while utilising an objective coding system for recording, filtering and interpreting minute aspects of behaviour while the child is actually participating in the environment.

Methods

The TCCM has four major codes to define observed behaviours:

* The **Task Activity** code which contains twenty-four different activity categories
* The **Language** code which measures the number and status of the utterances the target child addresses to others and those utterances that are addressed to the child
* The **Social code** which measures the social settings in which the children participates e.g., alone, in pairs, in a group and parallel
* The **Adult Involvement** code which measures the type and extent of interaction between the adult and the target child

Within each code are categories which measure behaviours in the classroom e.g. TC - C means the target child (the one being observed) is talking to another child; SOL means the child is playing alone, and so on. In all there are twenty-four different task activity categories, ten different social categories, seven language categories and seven adult involvement categories.

In this study there are 2400 intervals observed. The comparative analysis used for measuring differences between the two pre-school groups is based on 20 minute observation intervals for each child's participation (N=120) in a listed behaviour category. Non-parametrical statistical procedures were chosen for analysis (Mann-Whitney U test) because the nature of the data was ordinal and standard deviations indicated some variation (asymmetrical distributions).

Sample

Twelve children from ten pre-school institutions, previously classified as either care oriented and five educationally oriented, were randomly selected and observed for twenty-minute intervals, using one-minute recordings (N=120). Pre-schools were matched on several variable measures: total number of children served in each centre (80-110); age range of children served (3-6 years); teacher

salary range (75-85BD per month); tuition fees (25-30BD monthly); operating hours; language of instruction (Arabic) and nationality of teachers and children (100% Bahraini). Similarly, the following background variables on the children selected from each centre were controlled: age, mother's age and education, father's occupation, months in pre-school, and sex (Hadeed, 1994).

Interrater reliability for the TCCM was computed on a random sample of ten children, observed in ten-minute intervals by two independent observers. Kappa correlation coefficients for the four major behaviour codes yielded: 0.93, task codes; 0.91, social participation; 1.00, language; and 0.91, adult involvement. Video-taped recordings of seven children from the two types of pre-school units were also coded by two 'blind' research assistants. The results showed similar high correlation agreements (Kappa): task, 0.97; social participation, 0.83; language, 0.86; and adult involvement, 0.90. There were four major behavioural codes (task activities, social participation, adult involvement and language) used for reliability testing because individual category cell numbers were small. Furthermore, it made sense to follow the normal practice of previous research.

Results

The results are reported according to the behavioural codes listed below and are representative of equal time observed both in and outside the classroom.

(insert Table 1)

Task activities

Children, overall, spent slightly more than half their free-play period playing. When they were not playing, they were most likely to be waiting, watching and listening (49% of non-play observations). When the tasks, *Standing Around/ Aimless Wander or Gaze* (SA/AWG) and *Cruising* (CR) were added to this total, the results indicated a substantial proportion of time spent in categories described as 'inscrutable behaviours', meaning their complexity or cognitive yield (challenge) are ambiguous by their very nature. According to Sylva and her colleagues (1980) it is highly debatable whether a child engaged in watching is allowing her mind to wander or is contemplating a idea, concentrating or creating. These frequencies are higher than previous research conducted in Europe and America (Blatchford,

Battle & Mays, 1982; Sylva et al., 1980; Tizard et al., 1976a) yet are closely aligned with results from observations of children in other countries (Bekman, 1982; Nabuco, unpublished early findings, Portugal, 1992).

Similar to previous research, there was a tendency for children to prefer *Large Muscle Movement* (LMM) activities, such as swinging, climbing apparatus, running and manipulative toys (Blatchford et al., 1982; Davie et al., 1984). Pretending was also a preferred form of play for children yet it occurred less often in care oriented pre-schools. There were no behaviours observed in three categories: *Distress Behaviour, Examination* and *Structured Materials* for both pre-school orientations. This may be owed to the rather short observational session for each child (20 minutes). Observer bias may be responsible for the absence of the distress behaviour as teachers made every effort to curtail any potential disruptive behaviours before they happened while an observer was present.

When the task activities were compared between pre-school orientations (care and educational) significant differences emerged. Children at educationally-oriented pre-schools engaged significantly more in small scale construction, 3R's activities, and art tasks. They were more inclined to initiate tasks that involved purposeful movement and tasks that required problem-solving than children at care centres.

Children at care-oriented settings spent significantly more time in adult-directed art projects and music (recitations of the Quran), when compared with children at educational centres. Previous classroom observations would suggest that these findings are not surprising considering the children at care centres had limited materials and opportunities for engaging in original art projects (Hadeed & Sylva, 1995 in preparation). It also makes sense given the information that when children at care centres engage in art they are all given the same activity at the same time (Hadeed, 1993). Less understood is the disturbing finding which shows the long periods children spent sitting (often being reprimanded for minor movements and utterances) and waiting, particularly at care centres (49%). It seems this observed behaviour is not unusual. Other research has previously documented similar findings in several countries in the region (Al-Fadhel, 1989; Al-Jasser, 1990; Morsi, 1990). Characteristically, it seems when quality is low children spend more time waiting and watching.

Further differences in behaviours noted in pre-school settings emerge when we look at tasks that nurture children's play i.e., challenging, goal-oriented tasks (Table 2).

(insert Table 2)

Activities, such as art, constructional activities and structured materials encourage challenge and produce 'high yields' in terms of cognition, concentration, and perseverance at a given task (Stipek, 1993; Sylva et al., 1980) while tasks described as yielding 'moderate yield' (small version toys and manipulation tasks) provide less challenge and often a lack of commitment to a goal (Sylva et al.,1980). Lower yielding tasks such as games (both informal and with rules), gross motor play (*Large Muscle Movement*) and social playing around (giggling, goofing-off) provide the least amount of challenge and tend to lack tangible feedback and correction. When the three different 'cognitive' stretch' yields (high, moderate and low) were compared between the two pre-school settings, the results indicated that children at the educational centres engaged at high yielding tasks significantly more often than ($p<.001$) children at the care centres. No other comparisons (moderate and low yield) were significant.

Which tasks for how long?

Quite sensibly, those tasks that promote the most challenge tend to have, on average, the longer duration of concentrated commitment from the child (Hutt et. al., 1989; Smith & Connolly, 1980; Sylva et. al., 1980). For the Bahraini sample, when the proportions of bout lengths (at/over the 3 minute length) per task activity were compared between the two pre-school settings the results indicated that children at educational centres had higher proportions of time spent on tasks described as yielding excellent and good concentration levels (Table 3).

(insert Table 3)

Put clearly, children at educational centres not only spent more time at challenging task activities than their counterparts at the care pre-schools, but they also remained engaged for longer periods of concentrated time.

Adult-directed task activities

Overall, children at care pre-schools spent twice as much time in adult-directed activities such as tidying-up (DA); waiting (W); passive adult-led group activities (PALGA) and adult-directed art and manipulation (ADM) when compared with the educational pre-schools. In particular, activities such as art, music and 3Rs activities were typically 'staged' group activities and not geared towards the individual.

Social settings

To assess the social context of play, the TCCM provides several different social codes: TC (target child) alone; TC in pair; TC in a group; and TC parallel to others. Other social categories include the target child playing parallel within a small group, *SG/P*, a large group, *LG/P*, and the target child playing with another child but engaged in his own activity, *PAIR/P*. For the purpose of comparison between the two pre-school orientations, four combined social codes (**TC Alone, In Pair, In Group** and **Parallel**) were used for analysis due to the insufficient numbers in single cell categories. Table 4 shows the mean scores in each of the social listings by group orientation, based on a per child analysis (mean ranks).

(insert Table 4)

The results show that children at educationally oriented pre-schools played more while in pairs, alone and in parallel social settings when compared to children at care oriented pre-schools. As expected children in care oriented pre-schools played more often in large groups, usually led by adults.

Challenging play: with whom?

When challenging tasks e.g., *ART, SSC, PRE, MAN, SM, 3Rs, EX, SVT and LSC.* were added to the social setting equation and compared between pre-school types, the results mirrored earlier findings i.e., children in the educational group played more alone ($\underline{z}$ = 1.76, p<.04), in pairs ($\underline{z}$ = 2.32, p<.01) and parallel ($\underline{z}$ = 1.32, p<.09) while their counterparts in the care group played more in group social settings ($\underline{z}$ = 2.49, p<.006, Mann-Whitney U analyses; data not shown). These findings support previous research evidence claiming that children engage more in complex, imaginative (pretence) play while in pairs (Bruner, 1980; Weinberger & Starkey, 1994) in parallel (Jowett & Sylva, 1986) and alone (Rubin, 1982). Often, a

sound predictor of the complexity of play in relation to social context is child's age (Piaget, 1962, Smilansky, 1968; Tizard et. al., 1976a; Weinberger & Starkey, 1994) Other determining factors which influence the social context of children's play are the type of pre-school orientation, (Jowett & Sylva, 1986; Kagitcibasi, Sunar & Bekman, 1988; Lazar et. al., 1982; Meisels & Shonkoff, 1990; Osborn & Milbank, 1987; Sylva, 1993; Tizard et. al., 1976b; Olmsted & Weikart, 1989; Zigler & Hall, 1988), children's socio-economic backgrounds (Smilansky, 1968; Winter, 1989), and familial background variables (Belsky, 1989; Howes, 1990).

Adult involvement

To observe the staff behaviour seven different categories for describing the adult involvement were borrowed from a study of staff behaviour in *Monitoring the High/Scope Training Programme* (Sylva et al., 1985): ***Adult away, Adult present*** (adult is near the target child but not involved), ***Adult care*** (adult cares for the child's needs), ***Adult didactic*** (adult instructs, directs, or tells), ***Adult support*** (adult supports child's questions), ***Adult extends*** (adult extends child's activity in an insightful way), ***Adult questions*** (adult asks closed questions).

The results showed staff were present with the target child or teaching (adult/didactic) similarly, for both groups (Table 5). Significant differences emerged between the two types of provision for the three adult behaviours: caring, supporting and extending i.e., 'scaffolding' behaviours (Bruner, 1980).

(insert Table 5)

As Table 3 shows, adults may be visible and busy but not necessarily involved with children. Thirty eight per cent of the total time, adults were present while children were playing and teaching (31% adult/didactic) but the actual one-on-one time spent with a child, either by extending an activity, supporting or caring is less than 7% of the total time observed. Nearly 74% of this percentage was accounted for by the staff at the educationally-oriented centres.

The Adult/away category accounted for 22% of the total observed time, with some indications that children play differently in the two pre-school settings when an adult is not present. When adults were away, the care group played more, overall, but less at challenging tasks when compared with the educational group. While some research indicates that children do better while adults are 'away' (Rubin, 1982; Schweinhart et al., 1993), other research confirms that adult

involvement makes a great deal of difference in child performance and, to some extent, reflects the quality of learning taking place. It may well be that when assessing adult interaction, as categorically either 'away' or 'present', the results as indicated here, do not conclusively qualify the findings. Children can play constructively without an adult provided the programme is structured imaginatively and systematically by trained and skilled staff, e.g. High Scope. Some clarification and explanation for differences found between the two orientation groups is provided when the other categories, such as adult/support, adult/care and adult/extend, are considered. Further clues are offered in the following analysis of language interaction between adults and children.

Language

The Target Child Coding Manual (Sylva et al., 1980) includes nine language codes for recording timed observations in pre-school settings. They are used to record what the child says; what other children say to the target child; and what adults say to the target child. The following abbreviations are used to describe the language and its interaction: **TC** (Target child); **C** (Another child); **A** (Adult); and ----(speaks to); **GR** (Group). Out of the 2400 one-minute observations, only 12% contained connected conversation or dialogue. Over half of this percentage was accounted for by conversation with children, with less than five per cent (4.8%) going to dialogue between children and adults. From this sample, children were two and half times more likely to address another child than an adult which was somewhat less than previous studies (Tizard et al, 1976b; Sylva et al., 1980). The largest proportion of timed observations contained no talk at all (34.5%) i.e., the non-verbal language code, *none*, indicating that while children were in groups at care centres they were sitting silently and waiting most of the time (in adult-directed activities). This closely coincides with the high numbers recorded for periods of waiting and watching in the previous analysis for task activity levels (Table 1).

(insert Table 6)

When the language recordings between pre-school groups was compared the results showed children talked more with other children ($p<.002$) and adults spoke more to children ($p<.01$) in educationally-oriented settings when compared with children and adults in care oriented pre-schools. They also engaged in more adult dialogue ($p<.000$) at the educational centres. Findings support the contention that those schools supporting good staffing ratios in well prepared active learning environments, foster more talk between staff and children (Ball, 1994; Bruner,

1980; Curtis, 1992; Hadley, Wilcox & Rice, 1994; Weikart, 1993). Bearing in mind that children at care centres spent twice as much time in adult-directed activities, it also lends support to the claim that teachers exercise greater control over the amount of talking allowed when pre-school activities are teacher-directed, versus those activities which are child-centred (Hadley, Wilcox & Rice, 1994).

The previous comparison of conversation (dialogue) between the two types of pre-schools orientations does not completely define 'differences' between language interaction at various pre-schools. There are many features which foster conversation in the pre-schools which have not been mentioned in this study, e.g. the planning of the setting, the adult's perception of their role, the teacher's style, the teachers' expectations for verbal interaction and the views the adults share regarding the child's competence (Wood, 1988; Wood et al., 1980).

Summary

In general, children at both types of centres spent half the observed time playing and half the time waiting, watching and listening. This emphasises the rather 'traditional' structure management and adult-directed (control) focus of this sample in comparison to pre-schools which practice more active child-centred approaches to early years learning (Hadeed, 1993).

When the two pre-school orientations, care and educational, were compared, several significant findings emerged:

* Children at educational pre-schools spent significantly more time at challenging task activities than children in care-oriented centres ($p>.001$). Children at educationally oriented centres had longer periods (bouts) of concentrated play in challenging tasks when compared to the children at the care centres. Children at the educational pre-schools were engaged in challenging tasks two and half times more often than children at care pre-schools.

* Children in care pre-schools spent twice as much time in adult-directed activities when compared with the educational pre-schools.

* The children from the educational pre-schools played significantly more while alone, in pairs and in parallel social settings compared with children from the care oriented pre-schools. Children in care settings played more in group settings than children at educational centres. These findings were similarly reported for children engaged

in challenging tasks: children in care pre-schools tended to engage more in group play while their peers in educational centres were more likely to engage in pairs, alone and parallel settings.

* Staff at the educational pre-schools were significantly more involved with the children in supporting learning than staff at the care pre-schools. They offered more support ($p>.000$), caring ($p>.000$) and extending behaviours ($p>.05$) to children than staff at the care centres.

* Out of the 2400 one-minute periods observed only 12% contained connected conversation or dialogue. Less than five per cent of this dialogue was between the child and adult. Children were two and half times more likely to address another child than an adult. Children at the educational pre-schools were more likely to have dialogue with adults, while children at the care pre-schools were observed to engage in more child-to-child dialogue.

Discussion

The results of the time-sampled observations are similar to previous findings on 'education' and 'care' pre-school settings (Hadeed & Sylva, 1995 in preparation). In the more child-centred settings (educationally-oriented) children played and concentrated more at challenging tasks than children at care-oriented settings. They also had more dialogue with adults and received more supportive types of behaviour from staff. Children at care centres played more in groups for all types tasks and they spent more time in waiting, watching and listening to staff instructions when compared with children at educational centres. The considerable long episodes spent in these passive situations may have been due to a number of stressful factors placed upon teachers. Teachers in both settings tended to have higher staff/child ratios per classroom when compared to American and British standards i.e., 1:23 for care oriented and 1:14 for educationally oriented pre-schools. In the more structured care settings, materials were often inadequately supplied which added to the tension and discouragement for many teachers in their attempts to try to create stimulating environments. Staff did not see themselves as facilitators of learning yet rather as adults to instruct and discipline children (Hadeed, 1993). They were rarely seen on a rug, in a sand-put or crouched in conversation at the child's level and the body language was clearly suggestive of an adult in control and dominating child interactions. Interrupted bouts of concentration were observed more frequently at care centres. This was largely due to the lack of materials present and the teacher's inability to accurately

gauge or appreciate times when children were absorbed in tasks (Wood, McMahon & Cranstoun, 1980). Previous research has indicated that there are appropriate and helpful times when the adult's involvement enhances a child's performance and equally so, there are times when the adult can work as a barrier. Appropriate timing requires consideration, respect and understanding for the child's need to learn independently i.e., allowing mistakes to happen and providing the space for the child to correct these mistakes (Weikart, 1994). Furthermore, timing, in terms of adult involvement in child's play, is critical and without its awareness the consequences may suggest that children at care centres are not receiving adequate time to 'absorb' (Montessori, 1967), accommodate (Piaget, 1945) or explore (Hutt et al., 1989).

Overall, there appears to be no single explanation for the behavioural differences (children/staff) observed at pre-school centres. The several demographic and family factors considered in the larger study (Hadeed & Sylva, 1995 in preparation), which investigated the impact of pre-school experience on children's performance in care, educational and home settings, showed that background variation did not significantly contribute to outcomes . In other words, a matched control of background factors at study entry rules out the possibility that the observed differences found in this study are owed to those measured aspects of home life. This does not suggest that other unmeasured family characteristics such as family relationships, family life stresses, parenting practices, parental sensitivity/attachment and parenting risks (Belsky, Steinberg & Draper, 1991; Cummings, 1994; Howes & Olenik, 1986; Rutter, 1985) and the child's surroundings (Belsky, 1984; Rutter, 1985) could have played a critical role in the observed behavioural differences. In part, it is recognised that some of these factors may have been mediated through the cultural practices evident in the pre-school practices, themselves.

A more likely explanation for the differences found in observed behaviours (child/staff) is that characteristics of the centres themselves, led to the results. More adult involvement at educationally-oriented settings tended to provide more opportunity for children to engage in challenging tasks with longer periods of concentrated effort. The staff at educational centres had perceptions and attitudes of children's behaviour that varied from their colleagues at the care centres. They adopted a more responsive, caring and supportive attitude in assessing children, with less questioning (of the redundant kind) and interference. They allowed children more choice, less punitive punishment and held higher regard for

children's potential and abilities (Hadeed, 1993). As demonstrated in similar studies comparing various types of pre-school provision, pre-school management practices do directly influence behaviours and serve as an umbrella constituting pre-school surroundings, attitudes, interactions and practices.

Combined, the picture of behavioural interactions suggest that children at educational centres were more actively involved in learning. Child-initiated involvement was more evident and adults provided more 'facilitating' type behaviours when compared to conditions at care centres. These behaviours are linked with key features recognised in good pre-school practice which have been well documented in previous studies and serve as strong predictors of children's progress e.g., balanced curriculum in active-learning, well planned environments; supportive, trained staff who enjoy being with children; good staffing ratios; adequate staff pay and working conditions; and a commitment to understand, involve and educate parents.

Reflecting on different observational methods

Generally, time-sampling methods aim to provide actual accounts of behaviour as it happens, often without interruption or intervention i.e., a non static account of behavioural processes. They offer a valuable means for describing and subsequently, measuring effective change and improvement in an existing process of learning and education. Yet, despite their unique advantages, findings by observational methods have some serious limitations. Obviously there are those inherent problems associated with the instrument's degree of reliability e.g. unaccounted for variable influences, observer bias, observer reaction which are familiar elements in most types of research. Other concerns focus on the criteria used for constructs measurement (validation) which often constitute behavioural code dimensions; timing intervals and sessions; conditions under which observations are conducted, and so on. From a random selection of studies (Lunzar, 1958; Smilansky, 1968; Tizard et al, 1976; Rubin, 1982; Sylva et al, 1980; Leuven, 1994), research shows that not all time-sampling instruments are the same. Some instruments provide specific behavioural dimensions that seem to be tailor-made for the particular question (hypothesis) under investigation i.e., attempts to match goals of the study to the strengths and weaknesses of the instrument. Combined behavioural categories of cognitive and social behaviours/ interactions appear to be more the norm than the contrary. Often, several categories explicitly state quality characteristics in describing these overlapping

behavioural codes. Other instruments provide more discrete code classifications which allot specific categories for each behavioural domain i.e., cognitive, social involvement, language and adult interaction. For these methods the issue of measures of quality are not stated within the coding schemes, but rather inferred in the results and/or explanation of findings.

The differences mentioned in observational methods pose important questions which warrant closer consideration and investigation. Some of these questions are:

* How comparable are similar criteria for behavioural constructs which are measured by different time-sampling instruments i.e., concurrent validity? How sensitive is the chosen criteria in assessing inter group differences? If the variation seems considerable, then how consistent can we expect our recordings to be? Is it accurate to say a child absorbed at Level Five on the Leuven involvement scale (Laevers, 1994) is the same thing as a child engaged in 'advanced co-operative play with role differentiation' (Parten's extended by Tizard et al, 1976) or 'executive, mastery skills' (Bronson, 1994)?

* What are the effects of different time intervals on the nature and accuracy of observations? It appears from the previous studies mentioned, that the duration of timing periods can be anywhere from few seconds to several minutes, either selected at the beginning or end of the timing sessions.

* What are the effects of different total lengths of timed sessions on recorded observations? The research shows that total lengths of observed sessions vary considerably i.e., from a few minutes to half an hour or more.

* Timed-sampled behaviours have been taken during free play time (outdoors and indoors); during contrived play settings i.e., in a laboratory (indoors and outdoors) and in the home. What differences, if any, do these make in terms of results and explanation? Biasing the time sample by selecting and defining procedures that focus on select activities, no doubt, maximises the data count, yet it also limits the chance of seeing the randomness of activities selected by free choice. It may also affect the content of the presence of more opportunities for imaginative play and the number of participants (Weinberger & Starkey, 1994).

Taken together, these questions about observational methods used in research, are serious and need further attention. Results continue to depend on instruments where items (different behavioural dimensions) have been based on weak validation procedures and sometimes, on face validity alone. Regards for timing schedules and sessions have received even less scrutiny. As many researchers are calling for better ways to identify characteristics of quality in

preschool care (Scarr, Eisenberg & Deater-Decker, 1994) the attention has become increasingly focused on process measures.

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Task activities compared between preschools: care and educational (frequencies and percentages)

	Care (% of one-minute obs. in 20 min interval)		Educational (% of one-minute obs. in 20 min interval)		
Task activities[a]	**%**	**n**	**%**	**n**	**p**
Child initiated activities					
Large muscle movement (lmm)	7.4	87	7.7	91	.32
Large scale construction (lsc)	.2	2	.4	5	.49
Small scale construction (ssc)	0	0	1.9	23	**.02**
Art (art)	.09	1	5.1	60	**.007**
Manipulation (man)	6.14	72	8.8	104	.19
Structured materials (sm)	0	0	0	0	
Three R's activities (3R's)	2.8	33	12.5	148	**.05**
Examination (ex)	0	0	0	0	
Problem-solving (ps)	.2	2	3.7	44	**.01**
Pretend (pre)	5.6	65	9.7	115	.29
Scale-version toys (svt)	.43	5	.2	2	.15
Purposeful movement (pm)	1.5	17	4.7	55	**.03**
Informal games (ig)	4.0	47	3.8	45	.17
Games with rules (gwr)	0	0	1.3	15	.28
Adult-directed activities					
Music (mus)[b]	4.0	47	2.8	33	**.04**
Adult-directed art & manipulation (adm)	3.8	44	.2	2	**.008**
Passive adult-led group activities (palga)	8.8	103	4.6	54	.16
Non-play activities					
Social interaction, non-play (sinp)	2.9	34	3.4	40	.12
Distress behaviour (db)	0	0	0	0	
Standing around, aimless wander or gaze (sa/awg)	.7	8	.17	2	.07
Cruise (cr)	.3	4	.51	6	.47
Wait (w)	7.3	86	3.8	45	**.02**
Watching (wa)	25.5	299	13	154	**.000**
Domestic activity	18.4	216	11.7	138	.10
Total	100%	1172	100%	1181	

Note. The number of total observations analysed equals 2353. Ambiguous task listings were excluded. Comparative differences between children in preschool groups were analysed by Mann-Whitney U test. Percentages are based on total frequencies in an observed category during a 20 minute timed interval.

a. Further details and descriptions of categories are contained in Appendix A.

b. Numbers in the music category reflect adult-directed musical recitations from the Quran, not individually initiated activity.

Cognitive 'stretch' (challenge) for task activities by preschool orientation: care and educational (frequencies and concentration levels)

Challenging tasks are: 3R's, art, man, lsc, ssc, sm, svt, pre, ex

	Care	Educational		
	n	n	concentration level	p
	(n=actual number of obs. in a category)			
High yield				
3R's	33	148	good	.05
mus[a]	47	33		.04
ssc	0	23	excellent	.02
lsc	2	5	good	ns
art	1	60	excellent	.007
sm	0	0	good	ns
Moderate yield				
pre	65	115	excellent	ns
svt	5	2	good	ns
man	72	104	good	ns
ex	0	0	good	ns
Low yield				
sinp	34	40	moderate-poor	ns
games (informal & rule bound)	47	60	moderate-poor	ns

Note. The numbers in the music category represent adult-directed musical recitations of the Quran and therefore were not categorized as observations which yield high levels of challenge. Addtionally this category was not given a concentration level as it was adult-directed and not child initiated. p values based on analyses by Mann-Whitney U test.

Table 3:

Bout lengths compared between preschool orientations: care and educational
(frequencies and means for child-initiated activities)

	Care		Educational		
Task Activities	n	M	n	M	p
	(number of bouts > 3min and average bout lengths > 3min)				
lmm	10	8.2	11	7.5	.34
lsc	0	0	1	3.0	.07
ssc	0	0	4	5.5	**.02**
art	0	0	7	9.7	**.003**
man	7	10.0	8	10.9	.38
3R's	5	5.2	13	9.3	**.02**
ps	0	0	6	5.7	**.02**
ex	0	0	0	0	
pre	10	4.3	10	8.8	.28
svt	2	4.5	0	0	.08
mus	9	4.4	5	6.4	.15
sa/awg	0	0	0	0	
db	0	0	0	0	
sinp	4	3.25	4	6.8	.47
cr	0	0	1	3.0	.15
pm	2	3.0	9	4.5	**.01**
ig	6	6.5	5	6.4	.39
gwr	0	0	1	10.0	.15

Note. Bout lengths > 3 min were compared between preschools by Mann-Whitney U analysis. Frequencies of bouts > 3 min were compared on a per child basis. Means represent the average length of bouts > 3 min based on a per child basis (n=60 in each preschool orientation).

Table 4:

Social settings compared between preschool orientations: care and educational
(frequencies and percentages)

	Care		Educational		
	(%'s of one-minute observations in 20-min interval)				
Social settings (combined)	%'s	n	%'s	n	p
TC alone solitary & {solitary}[a]	3.6	(42)	8.8	(105)	.03
In pair pair & {pair}	7.6	(88)	14	(168)	.03
In group sm group & lge group	70.8	(818)	43	(516)	.000
Parallel sm group/**p**, lge group/**p**, {sm group/**p**, lge group/**p**}	17.9	(207)	34.3	(411)	.001
Total	100%	1155	100%	1200	

a. categories in brackets { } indicate language exchange; /**p** indicates parallel play. TC = target child. The Mann-Whitney U test was used for comparative statistical analysis between groups, based on total frequencies per child.

Table 5:

Staff involvement at preschool settings
(frequencies and percentages)

	Care		Educational		
	(%'s of one-minute observations based on 20 min interval per child)				
Type of Adult Involvement	**%'s**	**n**	**%'s**	**n**	**p**
Adult away	26.2	(314)	17.7	(209)	**.001**
Adult present	39.3	(471)	35.8	(422)	.08
Adult care	.3	(4)	4.9	(58)	**.000**
Adult didactic	30.7	(368)	31.4	(370)	.11
Adult question	2.5	(30)	3.7	(44)	.21
Adult support	.8	(9)	4.4	(52)	**.000**
Adult extend	.3	(4)	2	(24)	**.05**
Total[a]	100%	(1200)	100%	(1179)	

a. Percentages are proportions of adult involvement based on total observed minutes (N=2379, ambiguous obs were excluded). Numbers in parenthesis are actual observed minutes. Significant levels are based on *z* values which represent comparative analysis by the Mann-Whitney -U test.

Table 6:

Language categories at preschool settings
(frequencies and percentages)

	Care		Educational		
	(%'s of one-minute observations based on a 20-min interval per child)				
Language category	**%'s**	**n**	**%'s**	**n**	**p**
Adult - TC	2.5(30)		3.4	(41)	**.01**
Adult - C+TC	.84	(10)	1.84	(22)	.18
Adult - Group	21.2	(253)	19.1	(229)	.13
TC self + unison	4.0	(48)	6.2	(74)	.23
TC - C and C - TC	15.5	(184)	27.3	(327)	**.002**
TC - Adult	.9	(11)	4	(48)	**.000**
Child-to-child dialogue	8.3	(98)	6.1	(73)	.10
Dialogue with adult	2.4	(29)	7.3	(87)	**.000**
None (no talk)	44.3	(528)	24.9	(298)	**.000**
Total (2390)[a]	**100%**	1191	**100%**	1199	
Combined categories					
one-off remarks[b]	19.7	(235)	36.5	(438)	**.002**
Dialogue (child & adult)	10.7	(127)	13.5	(160)	.06

Note. Percentages are based on total number s observations occurring in a 20 minute interval on a per child basis. Comparative differences between groups were analysed by the Mann-Whitney -U statistical test. TC = target child; C = child.
a. Some observations were not accounted for in this total due to ambiguous or mis-recorded observations.
b. One-off remarks = A-TC, TC-A, C-TC, A-C+TC & TC-A

Task categories, Target Child Observation Method

large muscle movement (LMM): Active movement of the child's body, requiring co-ordination of larger muscles, such as running, climbing

large scale construction (LSC): Arranging and building dens, trains, etc., with large crates, blocks, etc.

small scale construction (SSC): Using small constructional materials such as lego, meccano, hammering and nailing

art (ART): 'Free expression' creative activities such as painting, drawing, chalking, cutting, sticking

manipulation (MAN): The mastering or refining of manual skills requiring co-ordination of the hand/arm and the senses: e.g., handling sand, dough, clay, water, etc. Also sewing, gardening, arranging and sorting objects

adult-directed art and manipulation (ADM): The child is mastering and refining skills and techniques under adult direction, and sometimes with an adult-determined end-product, e.g., tracing, directed collage

structured materials (SM): The use of materials, with design constraints, e.g. jigsaw puzzles, peg-boards, templates, picture or shape matching materials, counting boards, shape posting boxes, bead-threading and sewing cards

three Rs Activities (3Rs): Attempts at reading, writing, or counting. It includes attentive looking at books

examination (EX): Careful examination of an object or material, e.g. looking through a magnifying glass. It differs from manipulation in that the looking, smelling or tasting is more important than the handling

problem-solving (PS): The child solves a 'problem' in a purposeful way using logical reasoning, e.g., looking to see why something won't work and then repairing it

pretend (PRE): The transformation of everyday objects, people or events so that their 'meaning' takes precedence over 'reality

scale-version toys (SVT): Arranging miniature objects, e.g., dolls' houses, farm and zoo sets, transport toys, toy forts. It does not include use of toys such as prams, dolls and dishes. If miniature objects are used in pretend play, use previous category

informal games (IG): A play situation, with or without language, where the child is playing an informal game with another child. These are spontaneously and loosely organised, e.g., following one another around while chanting, hiding in a corner and giggling, or holding hands and jumping

games with rules (GWR): Includes ball games, skittles, circle games including singing games, and board games such as snakes and ladders, dominoes, noughts and crosses, etc.

music (MUS): Listening to sounds, rhythms or music, playing instruments, singing solos and dancing

passive adult-led group activities (PALGA): A large group of children, under the leadership of an adult, listen to stories, rhymes or finger plays, watch television, watch a planned demonstration (e.g., nature table, making popcorn), etc.

social interaction, non-play (SINP): Social interaction, with another child or with an adult, verbal or physical, but definitely not play, with another child or with an adult, e.g. chatting, borrowing, seeking or giving help or information to someone, aggressive behaviour (not play-fighting), teasing, being cuddled or comforted by an adult. Note that social interaction, non-play is used only when the child is not engaged in another task code category, e.g. if he is doing a puzzle while chatting to a friend, code it as structured materials

distress behaviour (DB): Seeking comfort or attention from adult or other child. He must show visible signs of distress or make a visible bid for comfort, e.g., prolonged crying, wanton destruction of materials, social withdrawal

standing around, aimless wander or gaze (SA/AWG): The child is not actively engaged in a task or watching a specific event

cruise (CR): Active movement around from one thing to another, or purposeful looking around, when the child appears to be searching for something to do

purposeful movement (PM): Purposeful movement towards an object, person or place, e.g., searching for an object, going outdoors, crossing the room to another activity

wait (W): The child's time of inactivity while waiting, for adult or child

watching (WA): Watching other people or events. The child may watch a specific person or activity, or look around in general. Includes listening-in to conversations without participating

domestic activity (DA): Includes going to the toilet, hand-washing, dressing, arrival and departure, rest, tidying up, milk, snack or meal